Delivering Effective Lectures

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Introduction

The lecture in its many forms is the most commonly used method for transferring information in medical education. There are, however, serious questions regarding the effectiveness of the traditional lecture approach. Arredondo et al (1994) point out that, although the lecture method is used extensively in medical education, academic physicians often are not trained in giving effective lectures.

There presently are many calls to move away from the traditional lecture to interactive computer learning systems that allow students access to information when and where they need it (Edlich 1993; McIntosh 1996; Twigg 1994). While this shift to "just in time" information provided by computer is occurring, there is, and will continue to be, a need for educators who are prepared to deliver lectures.

According to Swanson and Torraco (1995), the lecture was established formally centuries ago as a teaching process that began with a literal reading of important passages from the text by the master, followed by the master's interpretation of the text. Students were expected to sit, listen and take notes. In writing about the lecture method in medical education, Vella (1992) defines the lecture as the formal presentation of content by the educator (as subject matter expert) for the subsequent learning and recall in examinations by students. Ruyle (1995) describes the lecture simply as an oral presentation of instructional material.

The purpose of this paper is to:

- examine the characteristics of a lecture,

- offer suggestions for planning and delivering more effective lectures, and

- recommend ways to evaluate lectures.

Characteristics of the Lecture Method

Lectures in medical and healthcare education often have a poor reputation. Edlich (1993) argues that the lecture format for large classes is outdated and ineffective. McIntosh (1996) observes that lecturing is frequently a one-way process unaccompanied by discussion, questioning or immediate practice, which makes it a poor teaching method. So why do we lecture? Most educators learn how to teach based on their experiences as students. This "teach as I was taught" approach tends to perpetuate the lecture as a passive, one-way method of transferring information. The lack of faculty training in presenting effective lectures, rather than the method itself, may be the greatest weakness of the lecture.

Lectures are generally described from the instructor's point of view, and the student's need for interaction with the instructor is not addressed. In fact, lack of interaction is considered one of the major limitations of the traditional lecture (Munson 1992). Furthermore, when students have copies of the lecture notes or a text, a significant percentage would prefer reading them rather than attending classes that offer little or no interaction (Edlich 1993).

In a 1993 study of the clinical teaching skills of medical student tutors, Price and Mitchell suggest that, "Clinical teaching and learning must be an intellectually challenging experience whereby students, through extensive interactive teaching, are able to gain thorough conceptual understanding." Price and Mitchell also cite evidence that interactive learning is enhanced through the effective use of key teaching skills including questioning, demonstrating, providing positive reinforcement and reviewing.

Similarly, in support of the lecture method in medical education, Vella (1992) recommends the useof active learning activities including analysis of casereports, problem-solving exercises, student presentationsand students working cooperatively in groups. According to Twigg (1994), recent studies have shown that the majority of college students are active learners requiring learning experiences that engage their senses. Cavanagh, Hogan and Ramgopal (1995), in assessing learning styles of student nurses, recommend using a variety of teaching styles with an emphasis on participatory and experiential learning.

Table 1 compares the effective to the ineffective lecture. In the effective, active lecture the instructor involves students through a highly interactive and participatory approach using a variety of teaching techniques. Because of the questioning, interaction and involvement, students are actively engaged and connected to the educator. By contrast, in an ineffective, passive lecture, the instructor stands at a lectern and speaks with minimal student interaction. Not surprisingly, after a few minutes students find it difficult to concentrate, as there is little or no stimulation.

Efforts to improve the teaching of medical and other healthcare professionals must focus on changing the role of the student from passive observer to active participant. In this approach, the responsibility for meeting learning objectives is shared by the instructor and each student. One of the most important steps in achieving this shared responsibility is careful planning. First, however, the instructor must be sure that the lecture is appropriate for the particular learning situation (**Table 2**). When properly planned for the appropriate type of material, the lecture can be a very effective method of transferring information to students.

Table 1—Characteristics of the Effective and Ineffective Lecture

Characteristics of the Effective Lecture	Characteristics of the Ineffective Lecture
Educator-student interaction	100% educator talk, with limited or no interaction
Two-way communication	One-way communication
Educator-student questions	Few if any questions (educator or student)
Shared responsibility for active learning	Student depends on educator for all information
Small group, problem-solving activities	No student activities
Variety of supporting media	No supporting media
Limited note taking required (students have copies of lecture notes)	Extensive note taking required

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Table 2—When to Lecture

Lecture is appropriate when:

- Disseminating information quickly to a large audience

- Presenting new information before using other media or activities (e.g., a brief lecture before playing a videotape)

- Providing an overview of a topic

- Arousing interest in a topic

Lecture is not appropriate when:

- Presenting complex, detailed or abstract information

- Dealing with information concerning feelings and attitudes

- Training in psychomotor (hands-on) skills

- Teaching high-level cognitive skills (e.g., synthesis and evaluation)

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Adapted from: Renner 1993; Ruyle 1995.

Planning Interactive Lectures

Effective lectures do not just happen—they are planned. The educator must:

- Establish the purpose of the lecture

- Consider the logistics of the lecture

- Plan a variety of approaches (e.g., use of questioning, media, small group activities)

- Prepare a set of lecture notes

Purpose of the Lecture

The primary purpose of the lecture is to transfer information from the instructor to the student. Before developing the content of the lecture, it is a good idea to clearly state the purpose of the lecture. The **purpose** should describe in general terms what the students will learn during the lecture. It usually is not written in measurable terms. By contrast, an **objective** is a precise and measurable statement describing what the student will learn by attending the lecture. Depending on the design of the lecture, there may be a purpose, objective or both. In some situations the objective will also describe the criteria students must meet in order to demonstrate they

have learned the content of a lecture. Following is an example of a lecture topic with both a purpose statement and an objective.

Lecture Topic: Development of the placenta

Purpose: The purpose of this lecture is to acquaint students with the development of the placenta. Students will identify the placenta, types of placentation, the embryology of the placenta and the functions of the placenta.

Objective: After attending this lecture, the student will be able to locate the placenta, identify the types of placentation, describe the embryology of the placenta and match the functions of the placenta to their correct description.

Lecture Logistics

After determining the purpose and objective of the lecture, the instructor should next consider its **length**. In a study of the use of videotaped lectures in surgical oncology, Arredondo et al (1994) set the recommended lecture time at 45 minutes, including approximately 15 minutes devoted to audience interaction. Renner (1993) recommends that lectures last no longer than 30

minutes. Interactive lectures should last no longer than 60 minutes without giving the students a break, based on the authors' experience.

The **number of participants** attending a lecture has a significant impact on how the lecture is presented. Group size determines the use of questions, amount of interaction, selection and use of media (e.g., overhead transparencies, slides, computer-based projections, video, audio) and use of small group activities such as case studies, role plays and problem-solving exercises. The most common form of interaction during a lecture is questioning. **Table 3** shows estimates of how the number of participants can have an impact on the use of questioning.

It is important to keep audience size in mind at every step of designing the lecture. Failure to do so will undoubtedly have a negative impact on its effectiveness.

The **size and shape of the lecture room** also influence the design and delivery of the lecture. Consider several common situations.

- A room with tables arranged in a U-shape and chairs for 20 students is an ideal format for small group lectures. It allows the presenter to interact extensively with the students and use a variety of small group methods and media.

- A large room with 100 chairs arranged theater-style with an aisle down the middle makes it possible for the lecturer to move up and down the aisle to interact with students. The lecturer can ask students to turn their chairs around to form small groups for discussion.

- A lecture hall with a sloped floor and 200 seats firmly anchored in place makes it difficult to divide students into small groups. In this

Table 3—The Effect of Group Size on Questioning Techniques

Number of Participants	Description of Questioning Techniques
1–20	Both educator and students ask many questions. Students discuss lecture content with educator and among themselves.
21–30	Educator asks questions, which students answer. Students ask some questions. There is some discussion among students.
31–50	Educator asks questions, which students answer. Students ask some questions. There is limited discussion among students.
51–100	Educator asks questions, and only a small number of the students answer them. Students ask some questions. Students are able to discuss content only with other students seated near them. There is little or no feedback to the educator.
> 100	Educator asks questions, and students raise their hands to either agree or disagree. There are very few comments or questions from the students. Students are able to discuss content only with other students seated near them. There is little or no feedback to the educator.

situation, one of the few alternatives is to ask students to turn to their neighbor to discuss a question, react to a slide or solve a problem being shown on the projection screen.

The final logistical consideration is the media equipment available. Most lecture halls are designed to accommodate the use of slides, overhead transparencies,video and computer-based projections. In order to develop an effective lecture, the educator must design and use a variety of media effectively. An in-depth discussion of developing and using various forms of media is beyond the scope of this paper.

Lecture Components

Silberman (1990) suggests five approaches to maximizing students' understanding and retention during lectures. These can be used to help ensure the effective transfer of knowledge.

- **Use an opening summary.** At the beginning of the lecture, present major points and conclusions to help students organize their listening.

- **Present key terms.** Reduce the major points in the lecture to key words that act as verbal subheadings or memory aids.

- **Offer examples.** When possible, provide real-life illustrations of the ideas in the lecture.

- **Use analogies.** If possible, make a comparison between the content of the lecture and knowledge the students already have.

- **Use visual backups.** Use a variety of media to enable students to see as well as hear what is being said.

The key to an effective lecture style is to break down the lecture into its component parts and use a variety

of approaches within each component. This is especially critical when a group of students will be attending a series of lectures by the same educator. The three main parts of a lecture are the **introduction, body and summary**.

The purpose of the **introduction** is to capture the interest and attention of the students. It can also serve to make students aware of the instructor's expectations and encourage a positive learning climate. A good introduction is critical to the success of a lecture.

Tips for Creating an Effective Introduction

- Review lecture objective(s).

- Ask a rhetorical question.

- Ask for a show of hands in response to a general question.

- Ask a series of questions related to the lecture topic.

- Use an interesting or famous quotation.

- Relate the topic to previously covered content.

- Use a case study or problem-solving activity.

- Use a videotape or other media.

- Show an appropriate cartoon with the overhead or slide projector.

- Make a provocative statement to encourage discussion.

- Give a demonstration.

- Use a game or role play.

- Relate the topic to future work experiences.

- Share a personal experience.

- Relate the topic to a real-life experience.

Source: Sullivan and Wircenski 1996.

The instructor can then make a smooth transition into the body of the lecture once the attention of the students has been captured with an interesting introduction. The **body** of the lecture contains the core of the information to be transferred to the students. Beitz (1994) recommends that the instructor use brain-storming, discussions, problem-solving activities, case studies and games to make the lecture more interactive.

The purpose of the lecture **summary** is to draw together the critical information presented and ensure that students leave the lecture with a clear under-standing of this information. The summary should be brief and address only main points. There are several techniques which can be used to summarize a lecture:

• Ask the students for questions. This gives students an opportunity to clarify their understanding of the content.

• Ask questions of the students. Several questions which focus on the main points of the content may be used to summarize the content of the lecture.

• Use a transparency, slide or flipchart to review the summary points.

Lecture Notes

Many lecturers make the mistake of thinking that they know their content well enough to deliver a lecture without notes to guide them. This is very difficult for most instructors and usually results in an unsatisfactory experience for both the instructor and the student. Instead, the instructor should prepare lecture notes to serve as a script or set of cues to follow during the lecture. Lecture notes are key words, phrases and other reminders (e.g., audiovisual cues, questions, examples, notes for activities) organized into an outline format. If a text rather than an outline format is used, the lecturer may begin to read the notes and the students will become bored.

Lecture notes help the instructor:

• Stay on topic and prevent getting lost.

• Cover the main points without forgetting anything.

• Glance at a specific point and quickly return attention to the students.

• Relax and focus on delivery instead of worrying about what point to make next.

Source: Sullivan and Wircenski 1996.

There are seven basic approaches the instructor can use to outline key points:

• Standard sheets of paper (full-page or two-column)

• Note cards

• Overhead transparencies

• Flipchart pages

• Slides

• Computer-based projections

• Pages from a report, text or manual (with notes added and key terms highlighted)

Presenting Interactive Lectures

An effective lecture can be one of the most exciting and rewarding aspects of an educator's responsibilities. The instructor who is able to maintain participant interest with an exciting, dynamic delivery using a variety of instructional methods is more likely to be successful in helping students reach the learning objectives. The time and effort invested in planning pay off as the instructor and students interact, discuss, question and work together.

Questioning Techniques

One of the most effective techniques an educator can use during a lecture to help ensure **interaction** is to ask and encourage questions. Questions can be used to introduce lectures, stimulate interaction throughout the lecture and summarize content. Involving students through questioning helps to maintain their attention, which is critical when topics are complex and lectures are long. Suggestions for using questions include:

- Ask questions of the entire group. Those who wish to volunteer may do so, although the educator must guard against some students dominating the discussion.

- Target a question to a specific student. When the audience is relatively small, this technique can be used to involve more of the students.

- Use students' names when asking and answering questions—this recognition is a powerful motivator.

- Provide positive reinforcement when students respond. This praise will help to create a very positive climate and will encourage more students to enter into the discussion.

- Repeat students' questions and answers to ensure that all students hear the discussion.

- When a student asks a question, the educator can answer the question directly, respond by asking the student a different, related question or offer the question to the other students.

The key in asking and answering questions is to avoid a pattern. If the educator always asks and answers questions using the same pattern, this critically important teaching skill will have limited impact.

Presentation Techniques

The skilled lecturer uses a variety of approaches to involve students, maintain interest and avoid a repetitive lecturing style. A number of techniques can be used to make a lecture more interactive and effective:

- Use the lecture notes prepared during the planning stage. The notes include reminders and key points in the lecture introduction, body and summary.

- Open the lecture with a good introduction designed to capture the interest and attention of the students.

- Communicate on a personal level. The educator should attempt to relate to the students during the lecture.

- Maintain eye contact with the students. Eye contact gives the educator feedback on how well students understand the content and helps to communicate a caring attitude on the part of the educator.

- Exhibit enthusiasm about the topic. Smiling, moving around the room and gesturing with hands and arms project a feeling of energy and excitement.

- Project the voice so that those in the back of the room can hear clearly. For large lecture halls, use a microphone if necessary, with a long cord that will permit movement around the room.

- Avoid the use of slang or repetitive words, phrases or gestures that may become distracting with extended use. Avoid the use of fillers (e.g., "um," "er," "you know").

- Use a variety of audiovisual media.

- Ask a number of questions and encourage students to ask questions.

- Provide positive feedback when students ask questions, answer questions or make comments.

- Use students' names as often as possible.

- Display a positive use of humor (e.g., humorous transparencies or slides, topic-related stories).

- Make smooth transitions between parts of the lecture. These transitions should be highlighted in the lecture notes and might include:

  - A brief overview of the next topic

  - A review of the agenda between topics

  - A change of media

  - An interim summary before a new topic

  - An activity (case study or problem-solving activity)

- Close the lecture with a brief but powerful summary.

Tips to Reduce Presentation Anxiety

- Avoid eating a big meal before the lecture. Not only will a full stomach make you drowsy, but it makes it more difficult to move around the room with energy.

- Arrive early to make sure that everything is ready before the first student arrives.

- Make sure all of the media equipment is working.

- Locate and check the lighting and temperature controls.

- Decide where the lecture notes will be placed (e.g., on a lectern, desk, table) when they are not being held.

- Have a glass of water available during the lecture.

- Go for a short walk just before the lecture.

- Look over your lecture notes one last time.

- Greet students as they enter the room. Shake their hands, welcome them to the lecture and talk to as many of them as possible.

- Take a few deep breaths to relax before beginning the lecture.

Evaluating Lectures

Evaluation questions are easy to ask and often difficult to answer. The educator would like to know if the lecture made a difference. How effective was the educator in transferring knowledge to the students? Will the information have an impact? Did the students enjoy the lecture? How can the educator improve the next lecture?

There are three formal techniques which can be used to evaluate the quality of a lecture presentation. The first is **feedback from the students** and typically involves asking students to complete an evaluation form. The second is a **self-evaluation** that uses a video recording. The third formal evaluation technique involves the use of an **observer** (Sullivan and Wircenski 1996). Student feedback forms are used regularly in medical and healthcare education and will not be described in this paper. The use of video or an observer may be new to some educators and deserves a brief description.

The most effective technique an educator can use to improve the quality of presentation skills is to critique a videotape of her/his lecture critique. When video-taping is feasible, it is strongly recommended that the educator periodically record lectures. Analyzing a video allows the educator to identify positive and negative behaviors and to set specific goals for improving the quality of lectures. The educator can do a self-analysis or may sit with an experienced presenter who will help to analyze the lecture. In either case, the educator may refer to a lecture skills checklist (see **Appendix A**) to identify presentation strengths and areas needing improvement.

Another evaluation approach involves the use of an observer. The observer must be an experienced presenter who watches the lecture and takes notes

using a lecture skills checklist. The educator and observer may decide to videotape the lecture also. Following the lecture, the observer provides feedback about aspects of the lecture that were effective and helps the educator identify those lecture skills needing improvement.

Once the educator has received feedback regarding one or more lectures, goals can be established for improving her/his lecture skills. The key to giving successful lectures is practice. Using this evaluation process will result in the strengthening of positive behaviors and the elimination of negative ones.

Follow this three-step process to conduct a self-evaluation:

- Arrange to have the lecture videotaped. Explain to the students the reason for the recording equipment.

- At the conclusion of the lecture, distribute a student satisfaction form (if applicable).

- Using a lecture skills checklist, watch the videotape (with an experienced presenter if there is one) and critique the performance.

Summary

With planning and effective presentation techniques, the lecture can be a highly effective and interactive method for transferring knowledge to students. If the lecture is carefully planned, the educator will have a clear purpose of the lecture and will have considered the logistics associated with the number of students, amount of time allocated for the lecture, room size and available media. Planning will also help ensure that the educator uses a variety of approaches to introduce,

deliver and summarize the lecture. Lecture notes in outline form will help the instructor give an effective presentation.

Other key points to remember in preparing and delivering a lecture:

- The first few minutes of a lecture are important. Plan them well!

- Verbal communication skills are critical. These include appropriate voice projection, avoiding fillers, using students' names, making smooth transitions, using examples and providing praise.

- Nonverbal communication skills also are very important. These include eye contact, positive facial expressions, gestures and movement.

- Effective questioning and interaction are critical to the success of the lecture. Questioning skills include planning questions in advance, asking a variety of questions, using students' names and providing positive feedback.

- The lecture should be summarized by asking for questions, asking questions and using media to review main points.

- An evaluation using a video recording or an observer can assist the lecturer in assessing the quality of the presentation and improving lecture skills.

Appendix A

Lecture Skills Checklist

Instructions: Observe the lecture and consider each of the presentation skills listed below. For each skill, use the following rating scale to indicate the level of performance:

3:     Is competent at performing this skill and requires no additional practice

2:     Can perform this skill but requires additional practice

1:     Cannot perform this skill and requires extensive practice

NA: Skill not applicable to this lecture presentation

NO: Skill not observed during this lecture presentation

Note that there is space for five observations. If necessary, you can assess your performance on five different occasions. After your first lecture you should set some goals to improve specific presentation skills. By the time you make your fifth presentation, you should be receiving mostly "3s" for each presentation skill.

LECTURE SKILLS CHECKLIST					
PRESENTATION SKILLS	**OBSERVATIONS**				
	1	2	3	4	5
Preparation Skills					
Selected lecture methods in advance.					
Prepared lecture notes in advance.					
Prepared audiovisuals in advance.					
Planned effective techniques to introduce the lecture.					
Arranged room appropriately.					
Verbal Presentation Skills					
Projected voice (changed pitch, tone and volume).					
Avoided fillers (e.g., "um," "er," "you know," etc.).					
Used student names.					
Used familiar terms.					

PRESENTATION SKILLS	OBSERVATIONS				
	1	2	3	4	5
Used many examples.					
Provided praise and reinforcement.					
Accepted student ideas and suggestions.					
Used appropriate humor.					
Nonverbal Presentation Skills					
Maintained eye contact.					
Maintained positive facial expressions.					
Gestured with hands and arms.					
Maintained good posture.					
Moved around the room with energy.					
Followed lecture notes.					
Questioning Skills					
Asked questions at varying levels of difficulty.					
Asked questions to group.					
Asked questions to individual students.					
Involved all students (if possible).					
Repeated student responses and questions.					
Provided positive reinforcement.					
Audiovisual Skills					
Used presentation media correctly.					
Summarizing Skills					
Asked for questions.					
Asked questions.					
Used media to review main points.					

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Educational and Training Materials

Reference Manuals[1]

Clinical Training Skills for Reproductive Health Professionals (1995)

Genital Tract Infection Guidelines for Family Planning Service Programs (1991)

Infection Prevention for Family Planning Service Programs (1992)

IUD Guidelines for Family Planning Service Programs, 2nd ed. (1993)

Norplant® Implants Guidelines for Family Planning Service Programs, 2nd ed. (1995)

Postabortion Care: A Reference Manual for Improving the Quality of Care (published by the Postabortion Care Consortium 1995)

Service Provision Guidelines

PocketGuide for Family Planning Service Providers, 2nd ed. (1996)

Service Delivery Guidelines for Family Planning Programs (1996)

Training Audiovisuals

Slide Sets

Copper T 380A IUD Insertion and Removal (1993)

Managing Sexually Transmitted Genital Tract Infections (1991)

Videotapes

Infection Prevention for Family Planning Service Programs: Overview and 12 Training Demonstration Segments (1994) (3 versions: Africa, Asia and Latin America)

Insertion and Removal of the Copper T 380A IUD (1990)

Postabortion Care: A Global Health Issue (produced by the Postabortion Care Consortium 1994)

Postabortion Care Services: Use of Manual Vacuum Aspiration and Recommended Practices for Processing MVA Instruments (1996)

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[1] A training package consists of a reference manual, notebook for trainers and handbook for participants. Most packages are available in French and Spanish, and many are available in Portuguese and Russian as well. For videotapes, English scripts are available to permit voice-overs in other languages.

Workshop Proceedings

Issues in Cervical Cancer: Seeking Alternatives to Cytology (1994)

Learning Without Walls: A Pre-Congress Seminar (1995)

Summary Report of: Updating Service Delivery Guidelines and Practices: A Workshop on Recent Recommendations and Experiences (co-organized by Family Health International and JHPIEGO 1995)

Issues in Management of STDs in Family Planning Settings (1996)

Strategy Papers

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